

CLAIMS

We claim:

- 5 1. A method to manage power consumption of a medical imaging detector comprising:
receiving a first triggering signal;
changing the medical imaging detector to a first power consumption state based on the
first triggering signal;
receiving a second triggering signal; and
10 changing the medical imaging detector to a second power consumption state based on
the received second triggering signal.
2. A method of claim 1, wherein the received first triggering signal is an activation signal.
- 15 3. A method of claim 1, wherein the first power consumption state is either an off state, an
idle state, an on state, the second power consumption state is either an off state, an idle state, an
on state.
4. A method of claim 1, wherein the first triggering signal is an activation signal;
20 the first power consumption state is an idle state;
the second power consumption state is either an off state, an on state.
5. A method of claim 1, wherein the received second triggering signal is a system timeout
signal.
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6. A method of claim 1, wherein the received second triggering signal is a deactivation
signal and predictor signal.
7. A method of claim 6, wherein the predictor signal is derived from a prediction model.
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8. A method of claim 7, wherein the prediction model is based on one or more
correlation of pressure data, correlation of force data, probability prediction based time and force
of activation, statistic based on prior use, patient identifier indicia reader.
- 35 9. A method of claim 1, wherein the received first triggering signal is a deactivation signal,

wherein the received second triggering signal is an imaging acquisition completed signal.

10. A method of claim 9, wherein the first power consumption state is an on state;
wherein the second power consumption state is an off state.
- 5 11. A method of claim 1, wherein the received second trigger signal is absence of timeout,
presence of a deactivation, and presence of a predictor signal.
12. A method of claim 1, wherein the first power consumption state is an on state;
10 wherein the second power consumption state is an idle state.
13. A method of claim 12, wherein the received second triggering signal is a system timeout
signal.
- 15 14. A computer-accessible medium having executable instructions to manage power
consumption of a medical imaging detector, the executable instructions capable of
directing a processor to perform:
processing a received first triggering signal;
changing the medical imaging detector to a first detector power consumption state based
20 on the processed first triggering signal;
processing a received second triggering signal; and
changing the medical imaging detector to a second power consumption state based on the
processed second triggering signal.
- 25 15. The computer-accessible medium of claim 14, wherein the received first triggering signal
is an activation signal.
16. The computer-accessible medium of claim 14, wherein the first power consumption state
is either an off state, an idle state, an on state; and wherein the second power
30 consumption state is an off state, an idle state, an on state.
17. The computer-accessible medium of claim 14, wherein the received first triggering signal
is an activation signal; the first power consumption state is either an off state, an idle
state, an on state; and the second power consumption state is either an off state, an idle
35 state, an on state.

18. The computer-accessible medium of claim 14, wherein the received second triggering signal is a system timeout signal.
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19. The computer-accessible medium of claim 14, wherein the received second triggering signal is a deactivation signal and predictor signal.
20. The computer-accessible medium of claim 19, wherein the predictor signal is derived from a prediction model.
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21. The computer-accessible medium of claim 20, wherein the prediction model is based on one or more correlation of pressure data, correlation of force data, probability prediction based time and force of activation, statistic based on prior use.
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22. The computer-accessible medium of claim 14, wherein the received first triggering signal is a deactivation signal; and wherein the received second triggering signal is an imaging acquisition completed signal.
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23. The computer-accessible medium of claim 14, wherein the first power consumption state is an on state; and wherein the second power consumption state is an off state.
24. The computer-accessible medium of claim 14, wherein the received second triggering signal is absence of timeout signal, presence of a deactivation signal, and presence of a predictor signal.
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25. The computer-accessible medium of claim 14, wherein the first power consumption state is an on state; and wherein the second power consumption state is an idle state.
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26. The computer-accessible medium of claim 25, wherein the received second triggering signal is a system timeout signal.
27. A computer data signal embodied in a carrier wave and representing a sequence of instructions which, when executed by a processor, cause the processor to perform the method of:
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processing a received first triggering signal ;
changing the medical imaging detector to a first detector power consumption state based
on the processed received first triggering signal;
processing a received second triggering signal; and
5 changing the medical imaging detector to a second power consumption state based on the
processed received second triggering signal.

28. A computer data signal embodied in a carrier wave and representing a sequence of
instructions of claim 27 further comprising: the received first triggering signal is one of
10 activation signal, deactivation signal, or system timeout signal;
wherein the received second triggering signal is one of deactivation and predictor signal,
system timeout signal, or image acquisition completed signal;
the first power consumption state is either an off state, an idle state, an on state; and
the second power consumption state is either an off state, an idle state, an on state.

15 29. A computer data signal embodied in a digital data stream comprising data instructions to
manage power consumption of a medical imaging detector wherein the computer data
signal is generated by a method comprising: processing a received first triggering signal ;
changing the medical imaging detector to a first detector power consumption state based
20 on the processed received first triggering signal;
processing a received second triggering signal; and
changing the medical imaging detector to a second power consumption state based on the
processed received second triggering signal.

25 30. A medical imaging system comprising:
a digital radiographic system having a medical imaging detector;
a first device for generating a first triggering signal;
device for automatically changing the medical imaging detector to a first detector power
consumption state based on the first triggering signal;
30 a second device for generating a second triggering signal; and
device for changing the medical imaging detector to a second power consumption state
based on the second triggering signal.

31. A medical imaging system of claim 30 further comprising:
35 the first device for generating a first triggering signal is an activation switch.

32. A medical imaging system of claim 31 wherein the activation switch further comprises one of an electrical switch, an optical switch, or a capacitive switch.
- 5 33. A medical imaging system of claim 32, wherein automatically changing of medical imaging detector to a first power consumption state occurs only if the first triggering signal exceeds an appreciable level.
- 10 34. A medical imaging system of claim 33, wherein in the first power consumption state is an idle state; and wherein the second power consumption state is either an off state, or an on state.
- 15 35. A medical imaging system of claim 30, wherein the first signal is an activation signal that exceeds an appreciable level;
wherein the first power consumption state is either an idle state, or an on state; and wherein the second power consumption state is either an off state, or an on state.
- 20 36. A medical imaging system of claim 30, wherein the second triggering signal is a system timeout signal.
37. A medical imaging system of claim 30, wherein the second signal is a deactivation signal and predictor signal.
- 25 38. A medical imaging system of claim 37, wherein the predictor signal is derived from a prediction model.
- 30 39. A medical imaging system of claim 38, wherein the prediction model is based on one or more correlation of pressure data, correlation of force data, probability prediction based time and force of activation, statistic based on prior use.
40. A medical imaging system of claim 30, wherein the first trigger signal is a deactivation signal; wherein the second trigger signal is an imaging acquisition completed signal; and the second power consumption state is an off state.
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41. A medical imaging system of claim 30, wherein the first trigger signal is a combination of deactivation signal and prediction signal;
wherein the first power consumption state is an on state; and
wherein the second power consumption state is an off state.
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42. A medical imaging system of claim 30, wherein the first power consumption state is an idle state;
wherein the second trigger signal is absence of timeout signal, presence of a deactivation signal, and presence of a predictor signal; and
10 wherein the second power consumption state is an on state.
43. A medical imaging system of claim 30, wherein the first power consumption state is an on state;
wherein the second power consumption state is an idle state.
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44. A medical imaging system claim 30, wherein the second trigger signal is a system timeout signal.
45. A method for indicating state information for a medical imaging system comprising:
20 acquiring state information for a medical imaging detector;
displaying the acquired state information for the medical imaging detector;
acquiring reference state information for the medical imaging detector;
determining if the acquired state information matches the acquired reference state information for the medical imaging detector; and
25 changing the operation of the medical imaging detector based on the determination of the acquired state information and the reference state information.
46. A method for indicating state information for a medical imaging system according to claim 45, wherein the acquired state information is either one of an off state, standby
30 state, an on state, and an imaging state.
47. A method for indicating state information for a medical imaging system according to claim 45, wherein the reference state information is an imaging state.

48. A method for indicating state information for a medical imaging system according to claim 45, wherein changing the operation is waiting for either triggering event or exposure sequence information.
- 5 49. A method for indicating state information for a medical imaging system according to claim 47, wherein the acquired state information is an imaging state;
wherein the change in operation of the medical imaging detector is determining an exposure sequence attribute comprising at least one of number of exposures, a cycle time to complete number of exposures, sequence time which is a function of the number of exposures
10 and transition to another state;
the method further comprising displaying exposure sequence attribute.
50. A method for indicating state information for a medical imaging system according to claim 49 further comprising:
15 determining completion of exposure sequence; and
changing the operation of the medical imaging system if the determining action indicates a completion of exposure sequence.
51. A method for indicating state information for a medical imaging system according to claim 45, wherein the reference state information is an imaging state;
20 Wherein the acquired state information is either one of an off state, standby state, and an on state;
wherein changing the state information is either waiting for triggering event or exposure sequence information.
- 25 52. A method for indicating state information for a medical imaging system according to claim 51, wherein the triggering event is at least receiving one of reset signal, activation signal, and system signal.
- 30 53. A method for indicating state information for a medical imaging system according to claim 52, wherein the system signal is at least one of deactivation signal, predictor signal, system timeout signal, interrupt signal.

54. A method for indicating state information for a medical imaging system according to claim 52, wherein the system signal is a logical combination of deactivation signal, predictor signal, system timeout signal, and interrupt signal.
- 5 55. A method for indicating state information for a medical imaging system according to claim 52, wherein the system signal is statistically derived from at least one of deactivation signal, predictor signal, reset signal, system timeout signal, interrupt signal, and prior use.
56. A method for indicating state information for a medical imaging system according to
10 claim 45, wherein the comparison of the acquired state information and reference state information do not result in a match; the method further comprising:
changing the state of the medical imaging detector upon the occurrence of a received triggering signal;
determining a variable time interval that is indicative of an estimated time to change from
15 the acquired state to the triggered state; and
displaying determined variable time interval that is indicative of the estimated time to change from the acquired state to the triggered state.
57. A method for indicating state information for a medical imaging system according to
20 claim 56, wherein the displaying is one or more light emitting diodes, printer, liquid crystal display, cathode ray tube, and audio generation.
58. A method for indicating state information for a medical imaging system according to
25 claim 50, wherein the displaying is one or more light emitting diodes, printer, liquid crystal display, cathode ray tube, or audio generation.
59. A computer-accessible medium having executable instructions to indicate state information for a medical imaging system, the executable instructions capable of directing a processor to:
30 acquiring state information of a medical imaging detector;
displaying the acquired state information of the medical imaging detector;
acquiring reference state information of the medical imaging detector;
determining if the acquired state information matches reference state information of the medical imaging detector; and

automatically changing the operation of the medical imaging detector based on the determination of the acquired state and the reference state information.

60. The computer-accessible medium of claim 59, wherein the acquired state information is either one of an off state, standby state, an on state, or an imaging state; and wherein the reference state information is an imaging state.

61. The computer-accessible medium of claim 59, wherein changing the operation is either waiting for a triggering event or exposure sequence information.

62. The computer-accessible medium of claim 59, wherein the acquired state information is an imaging state; and wherein the computer-accessible medium further comprises instructions capable of directing a processor to perform:

determining an exposure sequence attribute comprising at least one of number of exposures, a cycle time to complete number of exposures, sequence time which is a function of the number of exposures and transition to another state; and displaying exposure sequence attribute.

63. The computer-accessible medium of claim 62, wherein the computer-accessible medium further comprises instructions capable of directing a processor to perform: determining completion of exposure sequence; and changing the operation of the medical imaging detector upon completion of determined exposure sequence attribute.

64. The computer-accessible medium of claim 59, wherein the reference state information is an imaging state; wherein the acquired state information is either one of an off state, standby state, or an on state; wherein changing the state information is either waiting for a triggering event or exposure sequence information; and wherein the triggering event is at least one of reset signal, activation signal, or system signal.

65. The computer-accessible medium of claim 59, wherein the comparison of the acquired state information and reference state information do not result in a match; and wherein

the computer-accessible medium further comprises instructions capable of directing a processor to perform:

upon the occurrence of a triggering signal changing the state of the medical imaging detector;

5 determining a variable time interval that is indicative of the estimated time to change from the acquired state to the triggered state; and

 displaying interval that is indicative of the estimated time to change from the acquired state to the triggered state.

10 66. A computer data signal embodied in a carrier wave and representing a sequence of instructions which, when executed by a processor, cause the processor to perform the method of indicating state information for a medical imaging system:

 acquiring state information of a medical imaging detector;

 displaying the acquired state information for the medical imaging detector;

15 acquiring reference state information for the medical imaging detector;

 determining if the acquired state information matches reference state information for the medical imaging detector; and

 changing the operation of the medical imaging detector based on the determination of the acquired state and the reference state information.

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67. A computer data signal embodied in a carrier wave of claim 66, wherein the acquired state information is either one of an off state, standby state, an on state, an imaging state; wherein the reference state information is an imaging state.

25 68. A computer data signal embodied in a carrier wave of claim 66, wherein changing the operation is either waiting for a triggering event or exposure sequence information.

69. A computer data signal embodied in a carrier wave of claim 66 wherein the acquired state information is an imaging state; and wherein the instructions are further capable of directing a processor to perform:

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 determining an exposure sequence attribute comprising at least one of number of exposures, a cycle time to complete number of exposures, sequence time which is a function of the number of exposures and transition to another state; and

 displaying exposure sequence attribute.

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70. A computer data signal embodied in a carrier wave of claim 69 wherein the instructions are further capable of directing a processor to perform:
determining completion of exposure sequence; and
changing the operation of the medical imaging system if the determining action indicates
5 a completion of exposure sequence.

71. A computer data signal embodied in a carrier wave of claim 66, wherein the reference state information is an imaging state;
wherein the acquired state information is either one of an off state, standby state, and an
10 on state;
wherein changing the state information is either waiting for a triggering event or exposure sequence information; and
wherein the triggering event is at least one of reset signal, activation signal, or system signal.

15 72. A computer data signal embodied in a carrier wave of claim 66, wherein the comparison of the acquired state information and reference state information do not result in a match; and wherein the instructions are further capable of directing a processor to perform:
changing the state of the medical imaging detector upon the occurrence of a triggering
20 signal;
determining a variable time interval that is indicative of the estimated time to change from the acquired state to the triggered state; and
displaying the variable time interval that is indicative of the estimated time to change from the acquired state to the triggered state.

25 73. An apparatus for indicating state information for a medical imaging system comprising:
device for acquiring state information of a medical imaging detector;
display device for displaying the acquired state information for the medical imaging
device for acquiring reference state information for the medical imaging detector;
30 device for determining if the acquired state information matches reference state information for the medical imaging detector; and
device for changing the operation of the medical imaging detector based on the determination of the acquired state and the reference state information.

74. An apparatus for indicating state information for a medical imaging system according to claim 73, wherein the acquired state information is either one of an off state, standby state, an on state, and an imaging state.
- 5 75. An apparatus for indicating state information for a medical imaging system according to claim 73, wherein the reference state information is an imaging state.
76. An apparatus for indicating state information for a medical imaging system according to claim 73, wherein changing the operation is either waiting for triggering event or
10 exposure sequence information.
77. An apparatus for indicating state information for a medical imaging system according to claim 75, wherein the acquired state information is an imaging state and the apparatus further comprises;
15 a device for determining an exposure sequence attribute comprising at least one of number of exposures, a cycle time to complete number of exposures, sequence time which is a function of the number of exposures and transition to another state; and
a display device for displaying exposure sequence attribute.
- 20 78. An apparatus for indicating state information for a medical imaging system according to claim 77 further comprising:
a device for determining completion of exposure sequence; and
a device for changing the operation of the medical imaging system if the determining action indicates a completion of exposure sequence.
- 25 79. An apparatus for indicating state information for a medical imaging system according to claim 73, wherein the reference state information is an imaging state;
wherein the acquired state information is either one of an off state, standby state, or an on state; and
30 wherein changing the state information is either waiting for triggering event or exposure sequence information.
80. An apparatus for indicating state information for a medical imaging system according to claim 79, wherein the triggering event is at least one of reset signal, activation signal, and
35 system signal.

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81. An apparatus for indicating state information for a medical imaging system according to claim 80, wherein the system signal is at least one of deactivation signal, predictor signal, system timeout signal, and an interrupt signal.
82. An apparatus for indicating state information for a medical imaging system according to claim 80, wherein the system signal is a logical combination of deactivation signal, predictor signal, system timeout signal, and an interrupt signal.
- 10 83. An apparatus for indicating state information for a medical imaging system according to claim 80 further comprising: where the system signal is statistically derived from at least one of deactivation signal, predictor signal, reset signal, system timeout signal, interrupt signal, and prior use.
- 15 84. An apparatus for indicating state information for a medical imaging system according to claim 73, wherein the comparison of the acquired state information and reference state information do not result in a match;
wherein upon the occurrence of a triggering signal changing the state of the medical imaging detector;
20 device for determining a variable time interval that is indicative of the estimated time to change from the acquired state to the triggered state; and
device for displaying variable time interval that is indicative of the estimated time to change from the acquired state to the triggered state.
- 25 85. An apparatus for indicating state information for a medical imaging system according to claim 84, wherein the device for displaying is at least one or more light emitting diodes, printer, liquid crystal display, cathode ray tube, and audio generation.
- 30 86. An apparatus for indicating state information for a medical imaging system according to claim 78, wherein the device displaying is at least one or more light emitting diodes, printer, liquid crystal display, cathode ray tube, or audio generation.